

ABSTRACT

A transmitter, receiver, and communication system that utilize a pseudo-random number sequence (PRNS) output unit that provides a PRNS of length N . The PRNS output unit generates the PRNS responsive to a number (s) of prescribed positive integers (q_x), a prescribed real impulse constant (r), and a prescribed non-zero real constant (C), where $1 < x < s$. The PRNS output unit includes an input acceptance section that accepts the number (s) of real number sequence initial values (Y_x), and the number (s) of integer parameters (p_x); and a calculation section that uses the prescribed real impulse constant (r), the prescribed non-zero real constant (C), the real number sequence initial values (Y_x), the integer parameters (p_x), and the prescribed positive integers (q_x) to calculate a recurrence formula that is used to generate a PRNS ($z'[y]$) of length N , and that outputs the PRNS ($z'[y]$), where $1 < y < N$.